

United States
Department of
Agriculture

Soil
Conservation
Service

Spokane,
Washington



Washington Water Supply Outlook

January 1, 1987



Foreword

How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall. This snowfall accumulates high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are viewed in conjunction with snowpack data to prepare runoff forecasts. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data and narratives describing current conditions.

Streamflow forecasts are cooperatively generated by Soil Conservation Service and National Weather Service hydrologists. Forecasts become more accurate as more data affecting runoff becomes known. For this reason, forecasts are issued that reflect three future precipitation conditions — Below Normal, Average, and Above Normal. These forecasts are termed reasonable minimum, most probable, and reasonable maximum. Actual streamflow can be expected to fall between the lower and upper forecast values eight out of ten years.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation, temperature, and other parameters are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. Because of the limited space, snow survey measurements are not published in monthly reports. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3687
Arizona	201 East Indianola, Suite 200, Phoenix, AZ 85012
Colorado	2490 West 26th Ave., Denver, CO 80211
New Mexico	517 Gold Ave. S.W., Room 3301, Albuquerque, NM 97102
Idaho	304 North 8th Street, Room 345, Boise, ID 83702
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	1201 Terminal Way, Room 219, Reno, NV 89502
Oregon	1220 Southwest 3rd Ave., Room 1640, Portland, OR 97208
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	360 U.S. Court House, Spokane, WA 99201
Wyoming	Federal Building, 100 East "B" Street, Casper, WY 82601

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 547, Portland, OR 97209.

Published by other agencies:

Water Supply Outlook Reports prepared by other agencies include: California — Snow Survey Branch, California Department of Water Resources, P.O. Box 388, Sacramento, CA 95802; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A 3V1; Alberta, Environment Technical Services Division, 9820 106th St., Edmonton, Alberta T5K 2J6.

Washington Water Supply Outlook

and

**Federal — State — Private
Cooperative Snow Surveys**

Issued by

Wilson Scaling
Chief
Soil Conservation Service
Washington, D.C.

Released by

Lynn A. Brown
State Conservationist
Soil Conservation Service
Spokane, Washington

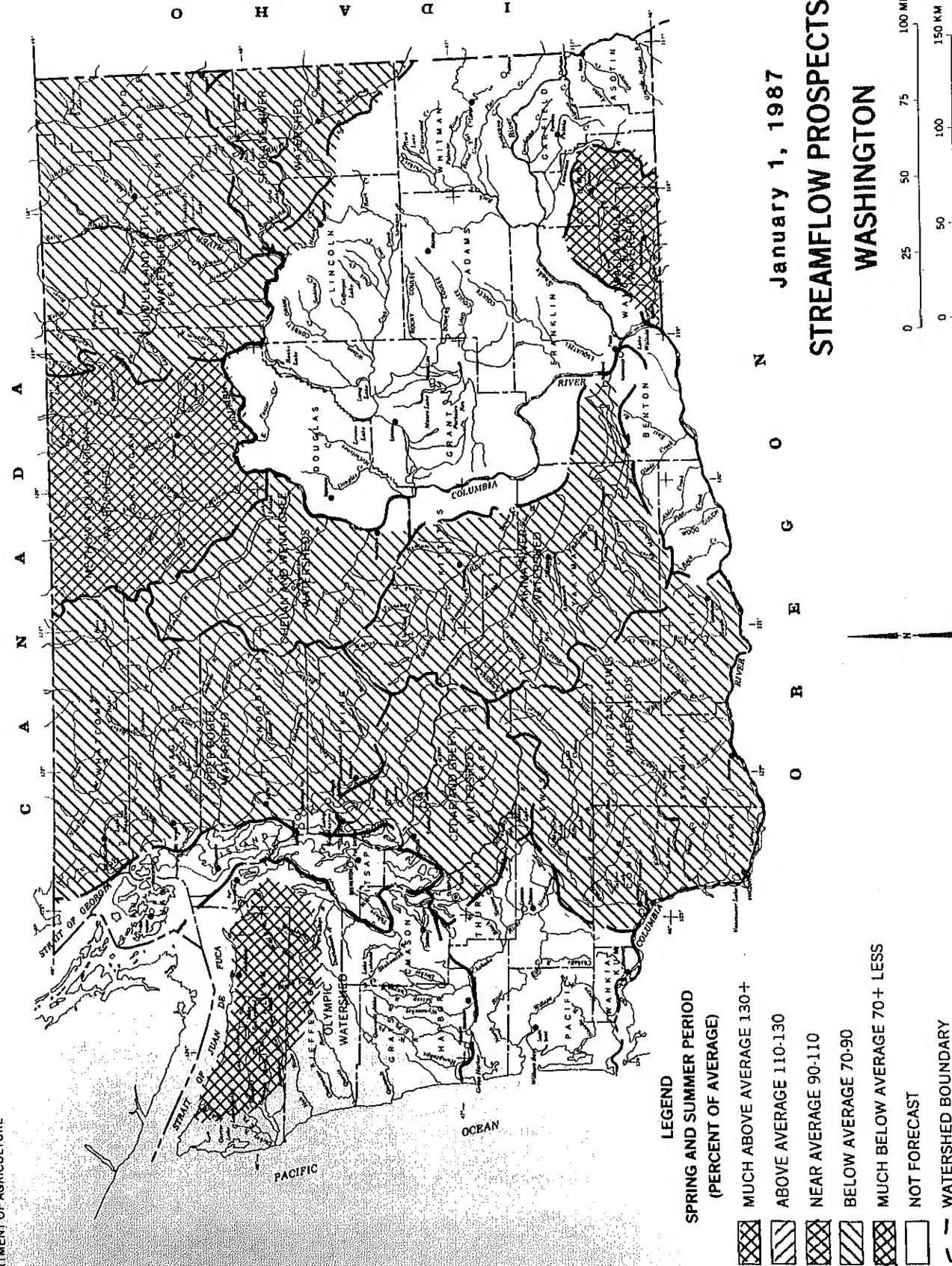
Prepared by

William F. Weller
Water Supply Specialist
Room 360 U.S. Courthouse
Spokane, Washington 99201

All programs and services of the USDA
are available to everyone without regard
to race, creed, color, sex, age, handicap
or national origin.

TABLE OF CONTENTS

STATE STREAMFLOW PROSPECTS MAP	1
STATE GENERAL OUTLOOK	2
BASIN OUTLOOK AND CONDITIONS	
SPOKANE	4
COLVILLE AND PEND OREILLE	6
OKANOGAN AND METHOW	8
WENATCHEE AND CHELAN	10
YAKIMA	12
WALLA WALLA	14
COWLITZ AND LEWIS	16
WHITE - GREEN	18
NORTH PUGET SOUND	20
OLYMPIC	22
SNOW DATA	24
ADDITIONAL INFORMATION	26



GENERAL OUTLOOK

SUMMARY:

Washington water supply forecasts are for below normal runoff for 1987. Snow cover and Precipitation are below average continuing a trend set last year. Reservoir storage is below normal at the major irrigation projects throughout the state. Streamflows have been below the norm for late summer and fall months.

NOTE: Included in this years reports is the snow survey data.

SNOWPACK:

Very few manual snow measurements were scheduled and made for the January 1 period. Forecasters must rely on SNOTEL data for snowpack information. The January 1 statewide average is 73%. Storms during early January have made improvements to the snowpack. All Washington SNOTEL Sites are reporting snowpack, with Lyman Lake at 5900 feet in elevation having the largest with 27.1 inches of water content. The Columbia River Basin has a snowpack 63% of normal.

PRECIPITATION:

Precipitation values from SNOTEL sites indicate a water year value near 85% of average for the high mountain areas. Precipitation data from the National weather service sites, located mostly in lower valley areas, show values around the state vary from 35% in the Spokane Basin to 82% of normal for the Olympic Basin. Storms, the first week in January, have deposited over 5 inches at many sites along the Cascade Mountain range.

RESERVOIRS:

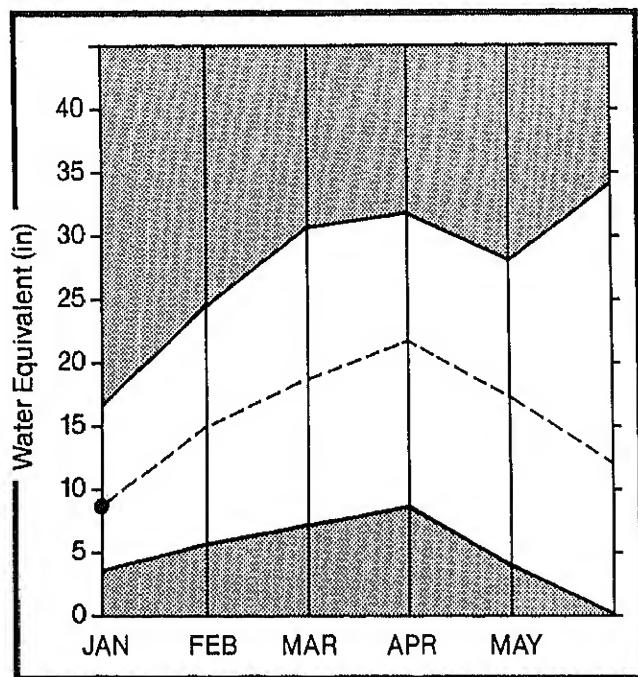
Reservoir storage is below average in Washington. Major irrigation reservoirs were drawn low the preceding summer when water supplies were also below normal. The Yakima Basin, which relies heavily upon stored water for irrigation, is at 58% of average. Columbia River reservoirs are near normal while storage in the Okanogan area is at 57% of capacity. Power reservoirs, such as Coeur d' Alene at 65% and Chelan Lake at 96% of normal, are suffering from low flows of last fall.

STREAMFLOW:

Streamflows are forecasted to be below normal for the coming spring and summer. Snowpack and water year to date precipitation values are below average over most of Washington. Forecasts vary from 72% in the Similkameen River to 93% in the Bumping River. December streamflows continued the summer and fall trend of below normal with only the Okanogan River at 101% being above average. Other December streamflows are; Spokane at Long Lake 76%, Pend Oreille River 75%, Columbia River at the International Boundary 86%, Chelan 65%, Snake 93%, Skagit 63%, and the Chehalis River 50%.

SPOKANE

Mountain snowpack* (inches)



*Based on selected stations

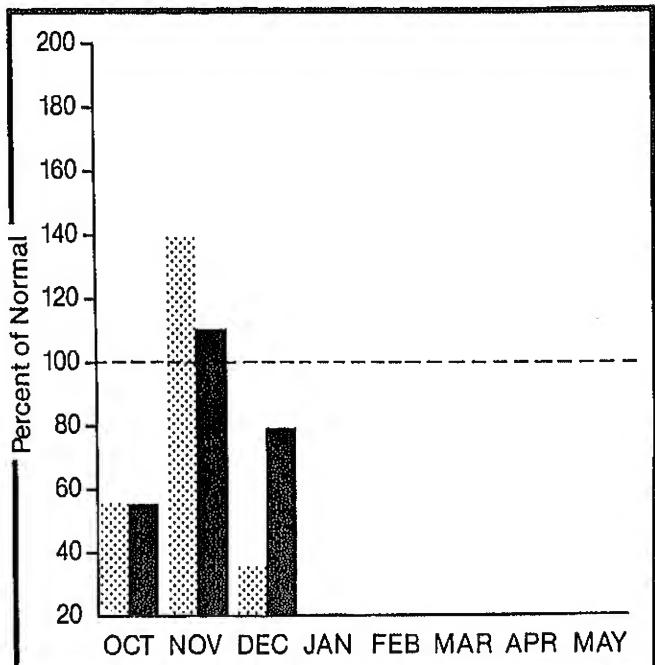
Maximum

Average

Minimum

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

SPOKANE RIVER BASIN

WATER SUPPLY OUTLOOK:

Spokane River's forecasted spring and summer runoff is 88% of normal. This forecast is based upon a snowpack that is 89% of average and a water year to date precipitation value of 79% of normal. Data for snow cover was obtained from SNOTEL sites with no manual measurements made for the January 1 period. December streamflow in the Spokane River was 76% of normal. Storage in Coeur d' Alene Lake was 134,200 acre feet compared to 184,200 last year, average storage in Cd'A for January 1 is 207,700 ac. ft.

For more information contact your local Soil Conservation Service office.

STREAMFLOW FORECASTS

FORECAST	FCST	25YR	IMOST	MOSTIRMX	RMXIRMN	RMN
		Avg	IPROB	PROBI	Z 1	%
	PERIOD	KAF	IKAF	ZAVGIKAF	AUGIKAF	Avg
SPOKANE at Post Falls		APR-SEP 2848	2480 87.	3932	138 1028	36.
		APR-JUL 2754	2400 87.	3805	138 995	36.

1 - Reas, max, and reas, min, forecasts are for 5% and 95% exceedance levels and also (2) below.

2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

RESERVOIR STORAGE (1000AF)

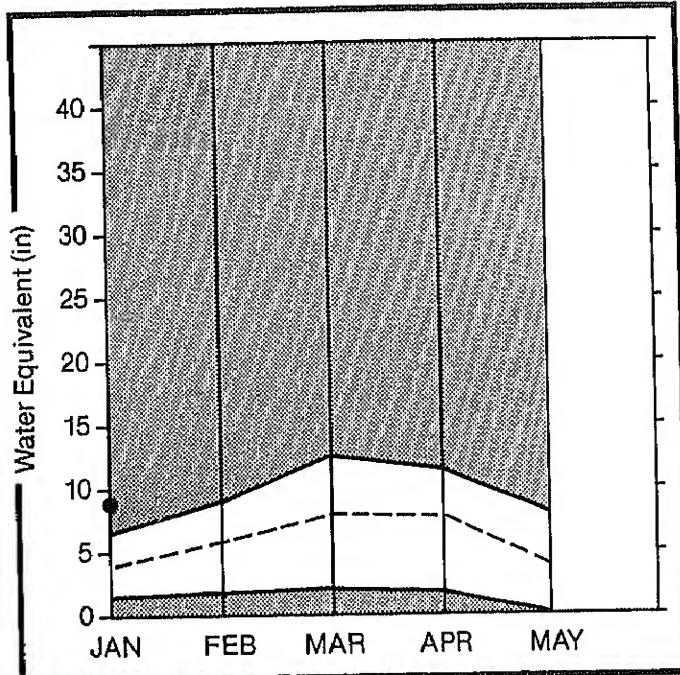
RESERVOIR	** USABLE STORAGE **			
	USABLE CAPACITY	THIS YEAR	LAST YEAR	AVE.
COEUR D'ALENE	291.2	134.2	91.7	205.4

WATERSHED SNOWPACK ANALYSIS

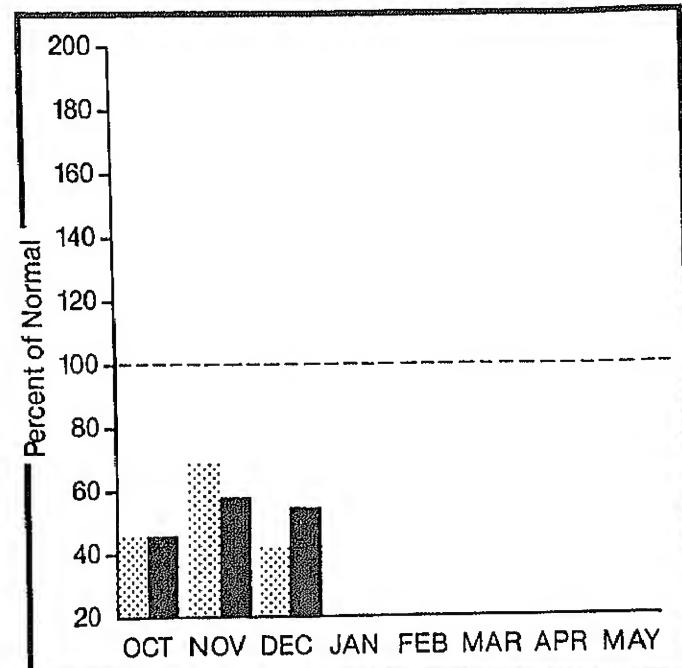
WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
Spokane River	13	121	84

COLVILLE AND PEND OREILLE

Mountain snowpack* (inches)



Precipitation* (percent of normal)



*Based on selected stations

*Based on selected stations

Maximum [Solid Bar] Average [Dashed Line]
 Minimum [Hatched Bar] Current [Line with dot]

Monthly precipitation [Hatched Bar] Year to date precipitation [Solid Bar]

COLVILLE - PEND OREILLE RIVER BASINS

WATER SUPPLY

OUTLOOK:

Forecasted streamflows for the Pend Oreille River is 84%, Kettle River 84% and the Colville River 82% of normal for the spring and summer runoff period. Streamflows for December were 75% of average on the Pend Oreille River, 72% on the Kettle River and 86% on the Columbia River at the international Boundary. Snowpack measurements in the Pend Oreille Basin are at 89% of normal based mainly on SNOTEL measurements. Manual measurements of snow will begin February 1. Precipitation during December was 41% of average and water year to date values are 54% of normal.

For more information contact your local Soil Conservation Service office.

STREAMFLOW FORECASTS

FORECAST	PERIOD	FCST	25YR	1MOS	1MOS1RMX	RMX1RMN	RMN	
		Avg	IPROB	PROB1	% 1	%		
		KAF	1KAF	2AVG1KAF	AVG1KAF	Avg		
PEND OREILLE RIVER b1 Box Canyon	APR-SEP	15425	13000	84.	17011	110	8990	58.
	APR-JUL	14156	12000	85.	15681	111	8319	59.
	APR-JUN	12227	10000	82.	13179	108	6821	56.
COLVILLE RIVER at Kettle Falls	APR-SEP	134	110	82.	177	132	43	32.
	APR-JUL	123	100	81.	162	132	39	32.
	APR-JUN	114	90	79.	147	129	33	29.
KETTLE RIVER nr Laurier	APR-SEP	1829	1540	84.	2363	129	717	39.
	APR-JUL	1738	1460	84.	2242	129	678	39.
	APR-JUN	1581	1260	80.	1971	125	549	35.
COLUMBIA RIVER at Birchbank 2	APR-SEP	44605	40300	90	50113	112	30487	68.
	APR-JUL	35705	32200	90	40055	112	24345	68.
	APR-JUN	26027	23500	90	29226	112	17774	68.
COLUMBIA RIVER at Grand Coulee 2	APR-SEP	66841	58400	87.	73105	109	43695	65.
	APR-JUL	56169	48900	87.	61257	109	36543	65.
	APR-JUN	44036	38300	87.	47988	109	28612	65.

1 - Reas, max, and reas, min, forecasts are for 5% and 95% exceedance levels and also (2) below.

2 - Corrected for upstream diversions or changes in reservoir storage. The average is computed for the 1961-85 base period.

RESERVOIR STORAGE

(1000AF)

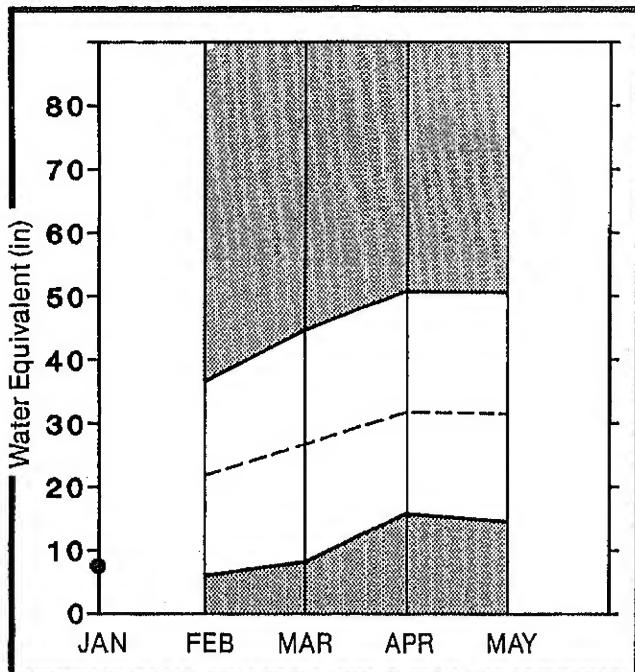
RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
ROOSEVELT BANKS	5232.0 715.0	4617.5 654.1	3293.0 391.0	4547.9 618.3

WATERSHED SNOWPACK ANALYSIS

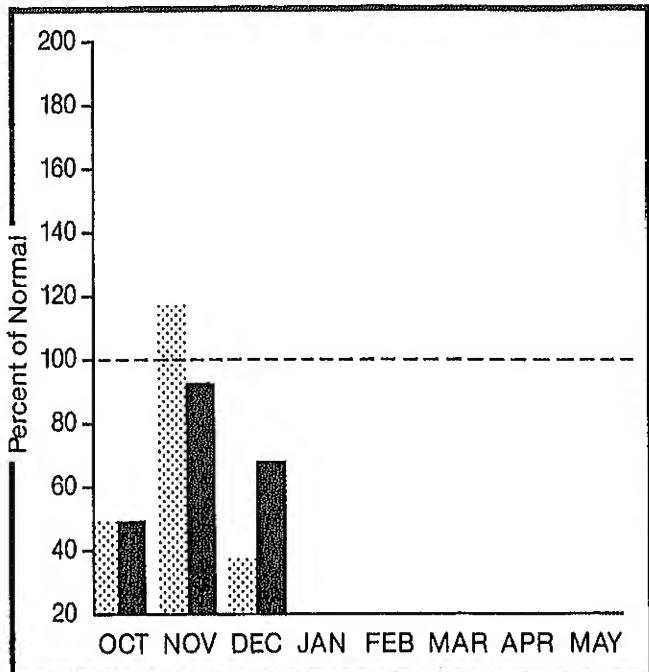
WATERSHED	NO. COURSES AVE.D
Colville River	0
Pend Oreille River	9
Kettle River	2
Omac Lake, Twin Lakes	0
Newman Lake	1

OKANOGAN AND METHOW

Mountain snowpack* (inches)



Precipitation* (percent of normal)



*Based on selected stations

*Based on selected stations

Maximum [Solid Gray Box] Average [Dashed Line]
Minimum [Hatched Box] Current [Black Line with Circle]

Monthly precipitation [Hatched Box] Year to date precipitation [Solid Gray Box]

OKANOGAN - METHOW RIVER BASINS

WATER SUPPLY OUTLOOK:

Streamflow in the Okanogan River was at 101% of average for December. Forecasts for spring and summer on the Okanogan River are for runoff of 91% of normal and 90% on the Methow River. Snow cover as of January 1 is at 74%, based upon SNOTEL data. Manual snow surveys are scheduled for February 1. Precipitation in December was at 38% with water year to date 68% of average. Storage in the Conconully Reservoirs is at 13,400 acre feet which is 57% of capacity.

For more information contact your local Soil Conservation Service office.

STREAMFLOW FORECASTS

FORECAST	PERIOD	FCST	25YR	1MOST	MOSTIRMX	RMXIRMN	RMN
		Avg	KAF	IPROB	PROB1	% I	%
SIMILKAMEEN R, nr Nighthawk	APR-SEP	1462	1390	95	2443	167	337
	APR-JUL	1365	1300	95	2283	167	317
	APR-JUN	1161	1100	95	1936	167	264
OKANOGAN R, nr Tonasket	APR-SEP	1644	1500	91	2700	164	300
	APR-JUL	1497	1360	91	2453	164	267
	APR-JUN	1262	1150	91	2071	164	229
METHOW RIVER nr Pateros	APR-SEP	980	880	90	1213	124	547
	APR-JUL	908	820	90	1129	124	511
	APR-JUN	773	700	91	963	125	437

1 - Reas, max, and reas, min, forecasts are for 5% and 95% exceedance levels and also (2) below.

2 - Corrected for upstream diversions or changes in reservoir storage. The average is computed for the 1961-85 base period.

RESERVOIR STORAGE (1000AF)

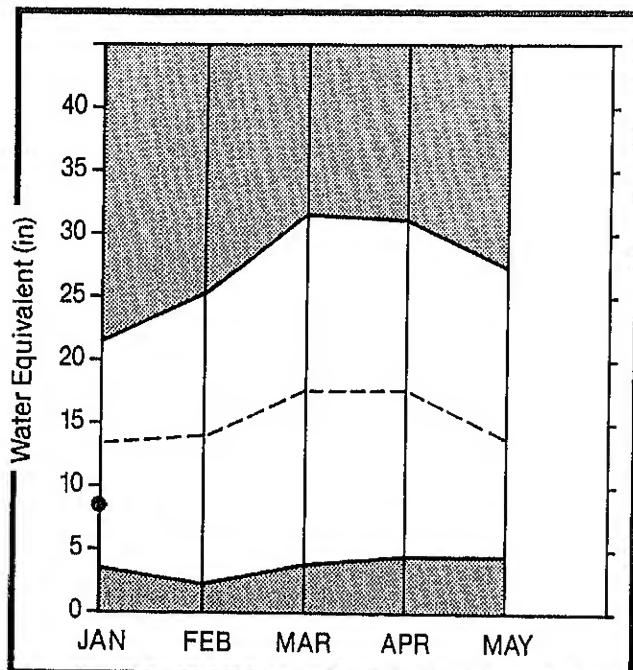
RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
CONCONULLY LAKE (SALMON)	10.5	8.0	8.0	7.5
CONCONULLY RESERVOIR	13.0	5.0	5.6	5.9

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF		
		LAST YR.	AVERAGE	
Okanogan River	17	102	78	
Methow River	2	116	93	

WENATCHEE AND CHELAN

Mountain snowpack* (inches)



*Based on selected stations

Maximum



Average



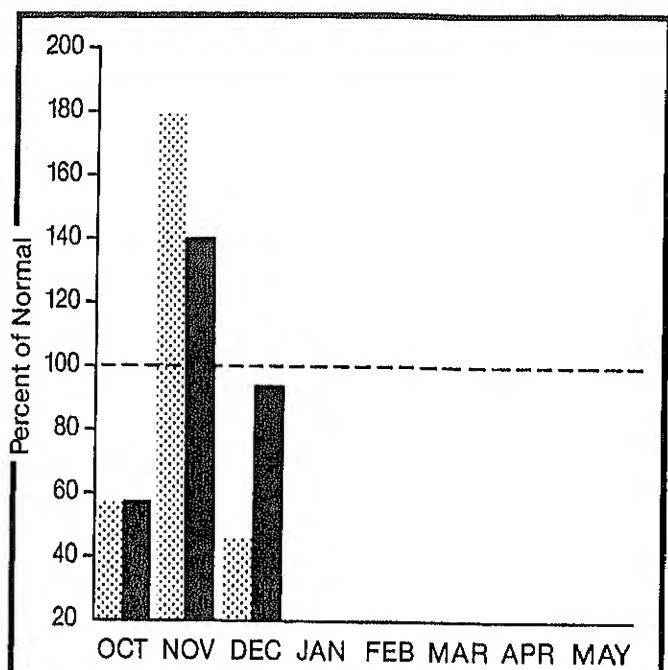
Minimum



Current



Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation



Year to date precipitation



WENATCHEE - CHELAN RIVER BASINS

WATER SUPPLY OUTLOOK:

Snowpack in the Wenatchee-Chelan Basin is at 86% of normal. Streamflows for December were 65% of average for the Chelan River and 70% on the Wenatchee River. Runoff for spring and summer is forecasted to be 90% of normal in the Wenatchee and 83% in the Chelan Basin. Stehekin River runoff is forecasted to be 85% of average. Precipitation during December was 46% in the Wenatchee and 46% in Chelan. Reservoir storage in Lake Chelan is at 365,000 acre feet or 96% of normal for January 1.

For more information contact your local Soil Conservation Service office.

STREAMFLOW FORECASTS

FORECAST	PERIOD	FCST	25YR	1MOS	MOSTIRMX	RMXIRMN	RMN	
		AVG	KAF	IPROB	PROBI	Z	%	
CHELAN RIVER at Chelan 1	APR-SEP	1203	1000	83	1349	112	651	54.
	APR-JUL	1055	880	83	1186	112	574	54.
	APR-JUN	826	660	80	900	109	420	51.
STEHEKIN R. at Stehekin	APR-SEP	860	730	85	945	110	515	60.
	APR-JUL	727	620	85	802	110	438	60.
	APR-JUN	553	470	85	608	110	332	60.
ENTIAT RIVER nr Ardenvair	APR-SEP	235	179	75	234	100	116	49.
	APR-JUL	213	160	75	213	100	107	50.
	APR-JUN	172	130	76	173	101	87	51.
WENATCHEE RIVER at Plain	APR-SEP	1270	1140	90	1597	126	683	54.
	APR-JUL	1113	1000	90	1401	126	599	54.
	APR-JUN	899	800	89	1124	125	476	53.
STEMILT nr Wenatchee (miners in)	MAY-SEP	138	100	80	160	116	60	43.
ICICLE CREEK nr Leavenworth	APR-SEP	370	330	89	463	125	197	53.
	APR-JUL	340	300	88	422	124	178	52.
	APR-JUN	270	240	89	337	125	143	53.
COLUMBIA R. bl Rock Island Dam 2	APR-SEP	72781	64300	88	81767	112	46833	64.
	APR-JUL	61601	54200	88	68984	112	39416	64.
	APR-JUN	48384	42600	88	54212	112	30988	64.

1 - Reas, max, and reas, min, forecasts are for 5% and 95% exceedance levels and also (2) below.
 2 - Corrected for upstream diversions or changes in reservoir storage.
 The average is computed for the 1961-85 base period.

RESERVOIR STORAGE (1000AF)

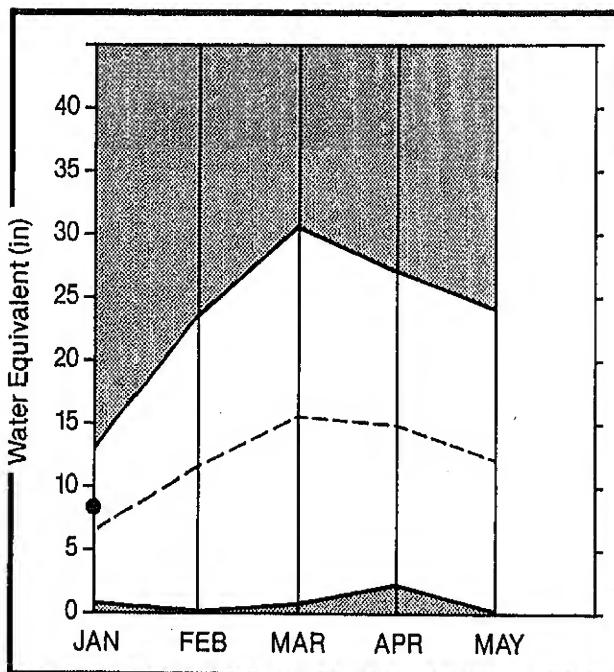
RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
CHELAN LAKE	676.1	365.0	365.7	378.7

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES	THIS YEAR AS % OF		
		AVE.D	LAST YR.	AVERAGE
Chelan Lake Basin	4	143	97	
Entiat River	0	0	0	
Wenatchee River	6	117	84	
Colockum Creek	1	44	67	
Squilchuck Creek	0	0	0	
Stemilt Creek	0	0	0	

YAKIMA

Mountain snowpack* (inches)



*Based on selected stations

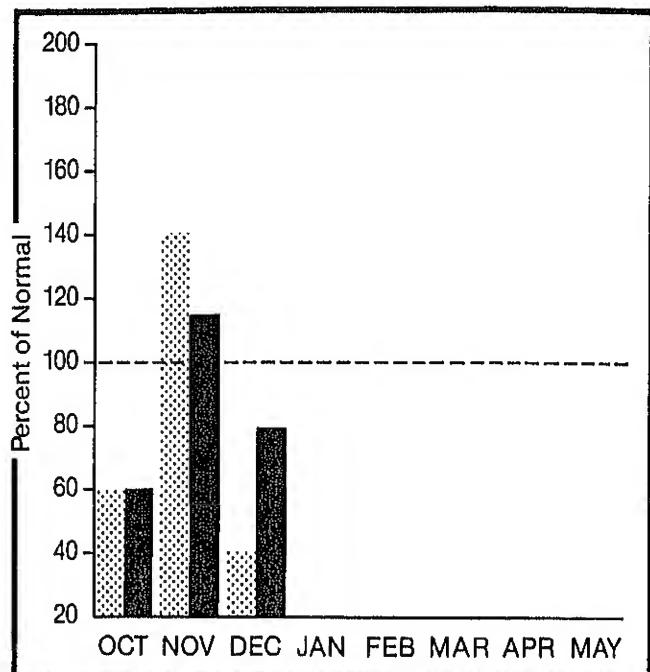
Maximum Minimum

Average

Current

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation Year to date precipitation

Year to date precipitation

YAKIMA RIVER BASIN

WATER SUPPLY OUTLOOK:

Reservoir storage continues low, with January 1 values for the five major reservoirs at 337,900 acre feet or 58% of normal. December streamflow was not available due to icing of the stream gage.

Forecasts for the Yakima Basin runoff are 84% of normal, and for the Yakima River at Cle Elum 84%, Naches River 85%, the Yakima River at Parker 84% and Ahtanum Creek 83%. Snowpack is 84% of average in the Yakima basin. Precipitation for December was 40% of normal and 79% for the water year to date.

For more information contact your local Soil Conservation Service office.

STREAMFLOW FORECASTS

FORECAST	PERIOD	FCST	25YR	IHOST	HOSTIRMX	RHXIRMN	RHM
		AVG	IPROB	PROB1	% 1	AVG1KAF	%
YAKIMA RIVER at Martin 1	APR-SEP	139	120	84	158	114 82	59.
	APR-JUL	128	110	86	136	106 84	66.
	APR-JUN	111	93	86	114	103 76	68.
YAKIMA RIVER at Cle Elum 2	APR-SEP	943	790	84	941	100 639	48.
	APR-JUL	854	710	83	847	99. 573	67.
	APR-JUN	734	620	84	737	100 503	69.
YAKIMA RIVER nr Parker 2	APR-SEP	2096	1760	84	2326	111 1194	57.
	APR-JUL	1898	1570	84	2102	111 1078	57.
	APR-JUN	1667	1400	84	1850	111 950	57.
KACHESS RIVER nr Easton 1	APR-SEP	121	100	83	139	115 61	50.
	APR-JUL	115	95	83	132	115 58	50.
	APR-JUN	101	85	84	117	116 53	52.
CLE ELUM RIVER nr Roslyn 1	APR-SEP	463	410	89	516	111 304	66.
	APR-JUL	422	370	88	450	107 290	69.
	APR-JUN	353	300	85	367	104 233	64.
BUMPING RIVER nr Nile 1	APR-SEP	142	130	92	171	120 89	63.
	APR-JUL	129	120	93	157	122 83	64.
	APR-JUN	107	99	92	129	121 67	63.
AMERICAN RIVER nr Nile	APR-SEP	124	110	89	147	119 73	59.
	APR-JUL	113	100	88	134	119 66	58.
	APR-JUN	94	83	88	111	118 55	59.
TIETON RIVER at Tieton 1	APR-SEP	246	200	81	249	101 151	61.
	APR-JUL	207	170	82	211	102 129	62.
	APR-JUN	165	140	85	173	105 107	65.
NACHES RIVER nr Naches 2	APR-SEP	867	740	85	1017	117 463	53.
	APR-JUL	784	670	88	921	117 419	53.
	APR-JUN	667	570	85	783	117 357	54.
AHTANUM CREEK nr Tampico 2	APR-SEP	47	35	83	60	128 18.0	38.
	APR-JUL	43	36	84	55	128 17.0	40.
	APR-JUN	37	31	84	48	130 14.0	38.

1 - Reas, max, and reas, min, forecasts are for 5% and 95% exceedance levels and also (2) below.

2 - Corrected for upstream diversions or changes in reservoir storage. The average is computed for the 1961-85 base period.

RESERVOIR STORAGE (1000AF)

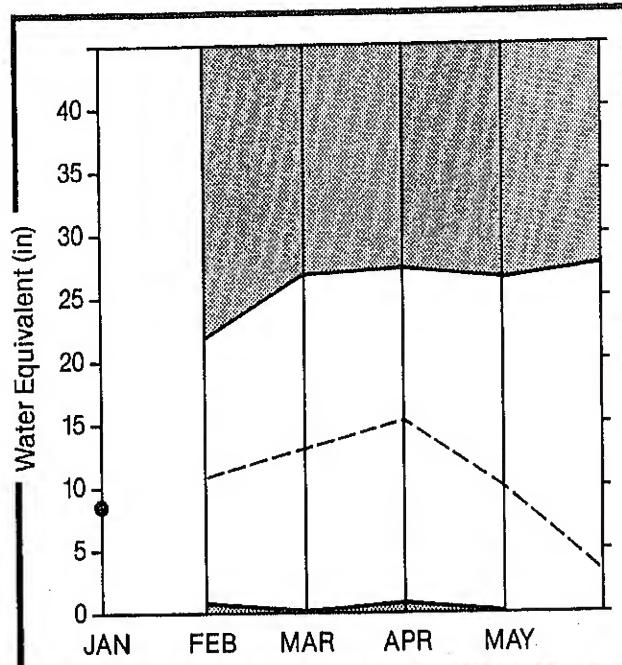
RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
KEECHELUS	157.8	64.2	59.2	89.70
KACHESS	239.0	55.5	49.7	159.1
CLE ELEM	436.9	102.2	119.5	230.72
BUMPING LAKE	33.7	12.4	14.3	36.13
RIMROCK	198.0	103.6	118.8	102.11

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
Yakima River	14	110	83
Ahtanum Creek	2	58	52

WALLA WALLA

Mountain snowpack* (inches)



*Based on selected stations

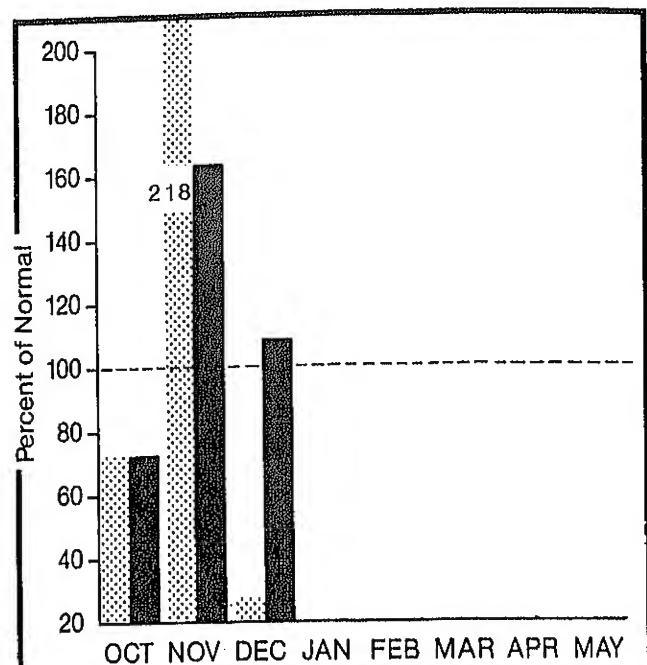
Maximum

Average

Minimum

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WALLA WALLA RIVER BASIN

WATER SUPPLY OUTLOOK:

Snowpack in the Walla Walla River basin is 84% of normal. Precipitation for December was 28% of average and the water year to date precipitation has been 109% of normal. Forecasted streamflow in the Walla Walla Basin is 91% of average. Streamflow for December in the Walla Walla River was 49% of normal.

STREAMFLOW FORECASTS

FORECAST	FCST	25YR	1MOST	MOSTIRMX	RMXIRMN	RMN
	PERIOD	Avg	IPROB	PROB1	% 1	%
		KAF	IKAF	ZAVGIKAF	AVGIKAF	Avg
MILL CREEK at Walla Walla	APR-SEP	17.5	16.0	91. 22	126 10.0	57.
	APR-JUL	17.3	15.7	91. 22	127 10.0	58.
	APR-JUN	17.2	15.6	91. 22	128 10.0	58.
COLUMBIA R. at The Dalles 2	APR-SEP	101000	84000	83. 110260109	57740 57.	
	APR-JUL	86500	71800	83. 94290 109	49310 57.	
	APR-JUN	70100	58200	83. 76426 109	39974 57.	

1 - Reas, max, and reas, min, forecasts are for 5% and 95% exceedance levels and also (2) below.

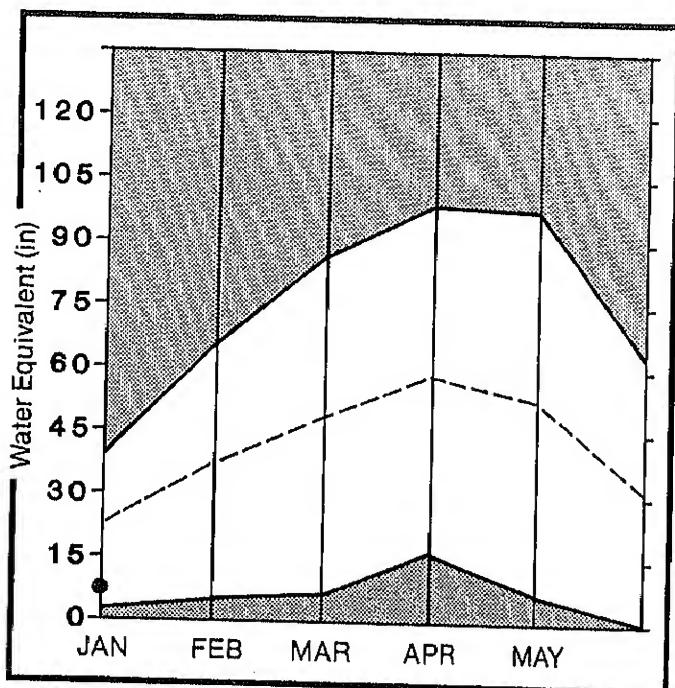
2 - Corrected for upstream diversions or changes in reservoir storage. The average is computed for the 1961-85 base period.

WATERSHED SNOWPACK ANALYSIS

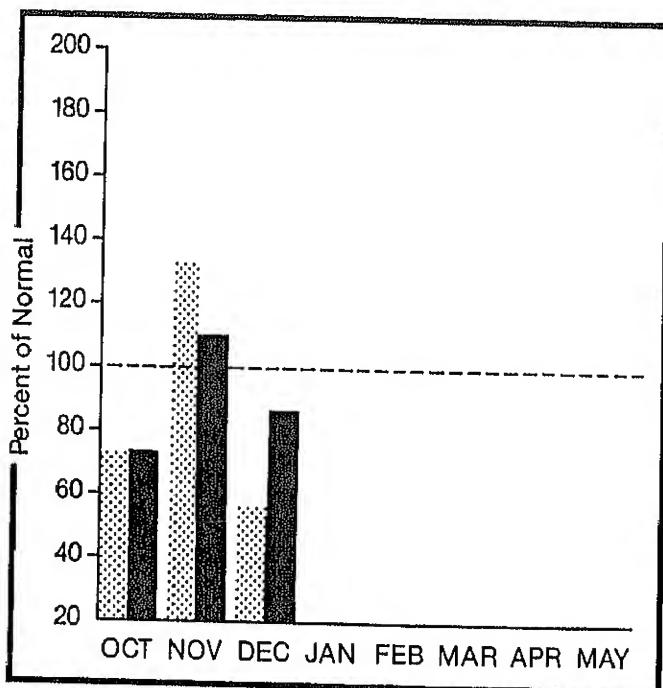
WATERSHED	NO.	THIS YEAR AS % OF	
	COURSES	AVE.D	LAST YR. AVERAGE
Mill Creek	1	161	84

COWLITZ AND LEWIS

Mountain snowpack* (inches)



Precipitation* (percent of normal)



*Based on selected stations

Maximum Average

Minimum Current

Monthly precipitation Year to date precipitation

COWLITZ - LEWIS RIVER BASINS

WATER SUPPLY OUTLOOK:

Snow cover for the Cowlitz-Lewis Basin is at 77% of normal. This compares to last years 63% at this time. Maximum water content was noted at the Paradise SNOTEL site where the snow pack contained 23.7 inches of water on January 1. Streamflow is forecasted to be near normal for the coming water year. Forecasts for the Lewis River is 88% and for the Cowlitz River 88%. Precipitation was 56% of normal for December. Water year to date precipitation has been 86% of average.

STREAMFLOW FORECASTS

FORECAST	PERIOD	FCST	25YR	1MOS	1TMR	RMX1RMN	RMN
		Avg	IPROB	PROB1	% 1	%	
			KAF	1KAF	2AVG1KAF	Avg1KAF	Avg
LEWIS RIVER at Ariel 2	APR-SEP	1249	1100	88.	1625	130 575	46.
	APR-JUL	1086	960	88.	1416	130 504	46.
	APR-JUN	961	850	88.	1254	130 446	46.
COWLITZ R. bl Mayfield Dam 2	APR-SEP	2038	1790	88.	2707	133 873	43.
	APR-JUL	1778	1560	88.	2360	133 760	43.
	APR-JUN	1502	1320	88.	1996	133 644	43.
COWLITZ R. at Castle Rock 2	APR-SEP	2673	2350	88.	3018	113 1682	63.
	APR-JUL	2323	2100	90.	2681	115 1519	65.
	APR-JUN	1980	1750	88.	2245	113 1255	63.

1 - Reas, max, and reas, min, forecasts are for 5% and 95% exceedance levels and also (2) below.

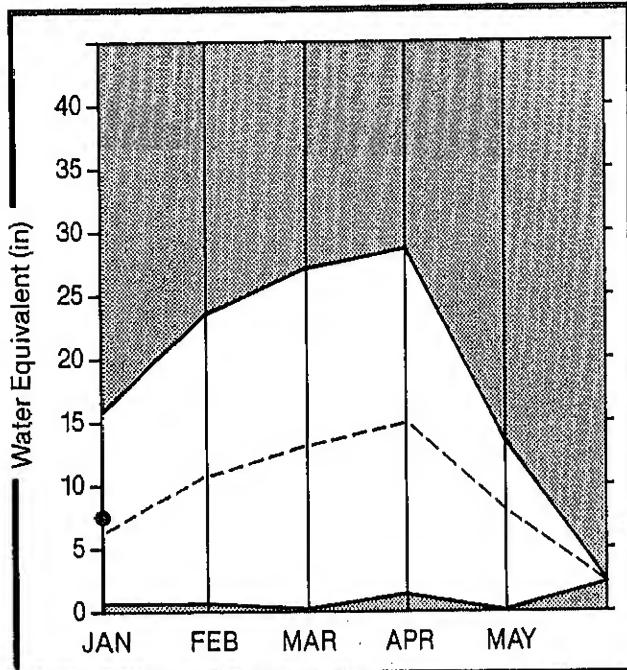
2 - Corrected for upstream diversions or changes in reservoir storage. The average is computed for the 1961-85 base period.

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO.	THIS YEAR AS % OF	
	COURSES	AVE.D	LAST YR. AVERAGE
Cowlitz River	1	93	68
Lewis River	4	72	78

WHITE - GREEN

Mountain snowpack* (inches)

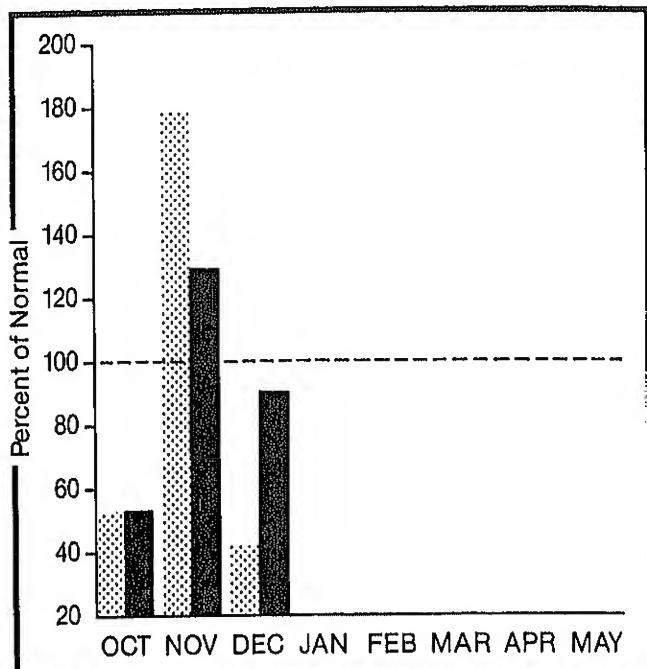


*Based on selected stations

Maximum Average

Minimum Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation Year to date precipitation

WHITE - GREEN RIVER BASINS

WATER SUPPLY OUTLOOK:

Summer runoff is forecasted to be 82% of normal on the Green River and 86% on the Cedar River. Water content at the Stampede Pass SNOTEL site showed 21.1 inches of water content on January 1. December runoff was near 60% of average. Precipitation was 41% of normal for December, bringing the water year to date to 91% of average. Snowpack is 74% of normal for the basin.

STREAMFLOW FORECASTS

FORECAST	PERIOD	FCST	25YR	1MOST	MOST	IRMX	RMXIRMN	RMN
		Avg	IPROB	PROB1	%	Z 1	%	
		IKAF	%AVGIKAF	AVGIKAF	Avg			
GREEN RIVER b1 Howard Hanson Dam 2	APR-SEP	316	260	82	371	117	149	47
	APR-JUL	284	240	83	339	119	141	50
	APR-JUN	256	210	82	300	117	120	47
CEDAR RIVER nr Cedar Falls	APR-SEP	93	80	86	113	122	47	51

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.

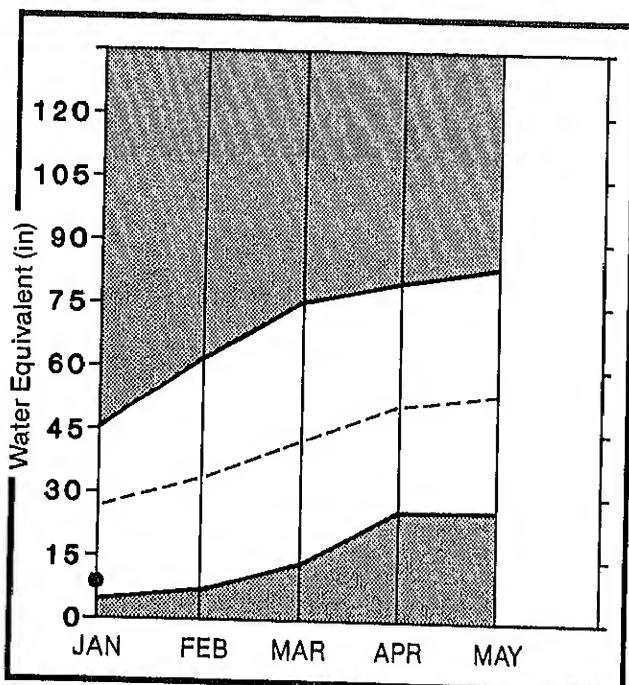
2 - Corrected for upstream diversions or changes in reservoir storage. The average is computed for the 1961-85 base period.

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES	THIS YEAR AS % OF		
		AVE.D	LAST YR.	AVERAGE
White River	2	150	116	
Green River	7	122	86	

NORTH PUGET SOUND

Mountain snowpack* (inches)

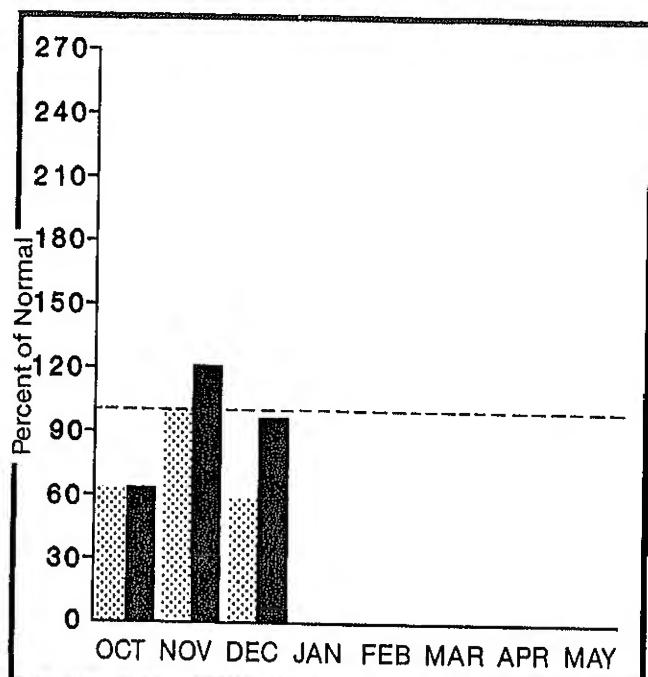


*Based on selected stations

Maximum Average

Minimum Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation Year to date precipitation

NORTH PUGET SOUND RIVER BASINS

WATER SUPPLY OUTLOOK:

Snow cover for the North Puget Basin is 71% of normal, with the Harts Pass SNOTEL site having 19.1 inches of water content as of January 1. Precipitation values for December were 58% of average, with a water year to date at 95%. Forecasted runoff for the Skagit River is 94% of normal. Reservoir storage is below average with Ross storing 1,178,700 acre feet as of January 1, compared to last years 1,206,000 acre feet.

For more information contact your local Soil Conservation Service office

STREAMFLOW FORECASTS

FORECAST PERIOD	FCST	25YR	1MOST	MOST	IRMX	RMXIRMN	RMN
	AVG	KAF	IPROB	PROB1	%	%	
SKAGIT RIVER at Newhalem 2	APR-SEP 2356	2210	94.	2823	120	1597	68.
	APR-JUL 1972	1850	94.	2363	120	1337	68.
	APR-JUN 1485	1400	94.	1786	120	1014	68.

1 - Reas, max, and reas, min, forecasts are for 5% and 95% exceedance levels and also (2) below.

2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

RESERVOIR STORAGE (1000AF)

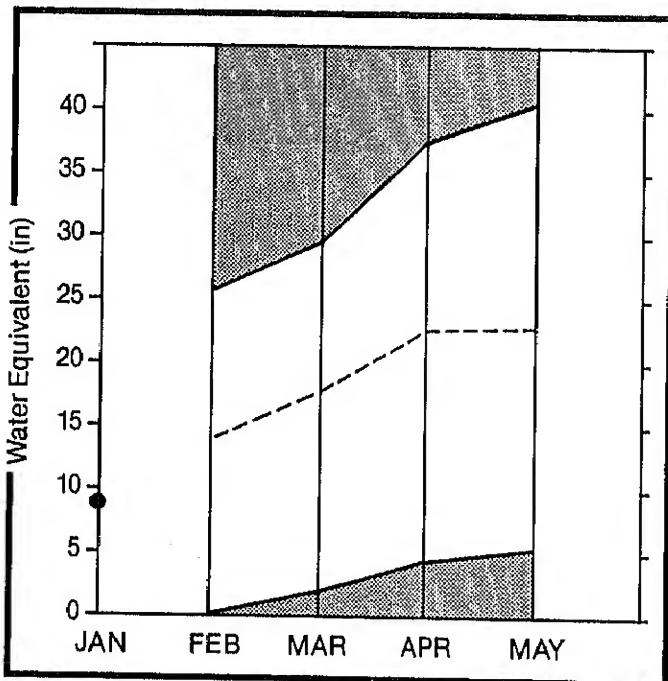
RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
ROSS	1404.1	1178.7	1096.0	789.9
DIABLO RESERVOIR	90.6	84.6	84.0	-----
CORGE RESERVOIR	9.8	8.0	7.6	-----

WATERSHED SNOWPACK ANALYSIS

WATERSHED	COURSES AVE.D	NO. THIS YEAR AS % OF		
		LAST YR.	AVERAGE	
Skagit River	3	131	78	
Baker River	0	0	0	
Cedar River	0	0	0	
Snoqualmie River	0	0	0	
Skykomish River	2	126	68	

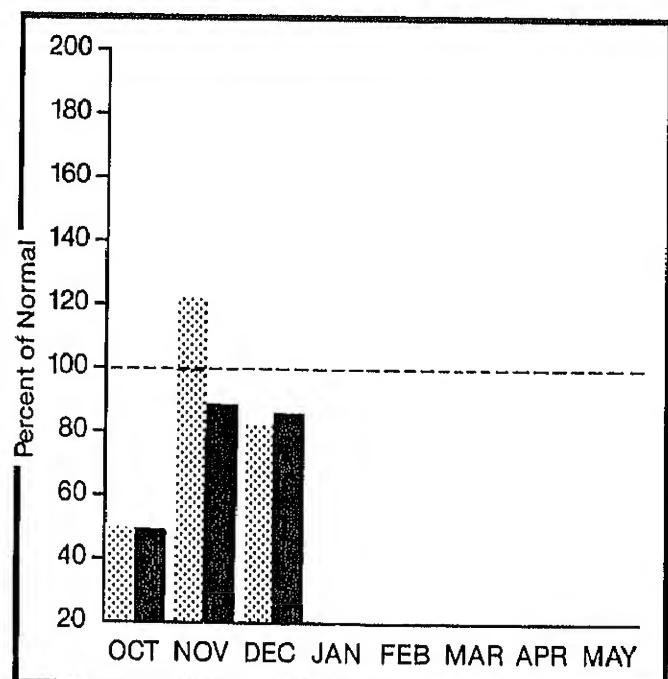
OLYMPIC

Mountain snowpack* (inches)



*Based on selected stations

Precipitation* (percent of normal)



*Based on selected stations

Maximum Average

Minimum Current

Monthly precipitation Year to date precipitation

OLYMPIC PENINSULA RIVER BASINS

WATER SUPPLY OUTLOOK:

December precipitation was 82% of normal. The water year to date accumulation is 86% of average. Snow cover is estimated to be 90% of normal based upon snow pillow data from Carroll Pass on the Wynoochee River. Area streamflow was below normal during December. Forecasts of runoff for the Dungeness River is 90% of average and on the Elwha River 90%.

STREAMFLOW FORECASTS

FORECAST	PERIOD	FCST	25YR	1MOST	HOSTIRMX	RMXIRMN	RMN
		Avg	Iprob	Prob1	% 1	%	
		KAF	IKAf	ZAVG1KAF	Avg1Kaf	Avg	
DUNGENESS RIVER nr Sequim	APR-SEP	160	144	90	176	110 112	70.
	APR-JUL	130	117	90	143	110 91	70.
	APR-JUN	97	87	90	106	109 68	70.
ELWHA RIVER nr Port Angeles	APR-SEP	553	500	90	611	110 389	70.
	APR-JUL	454	410	90	501	110 319	70.

1 - Reas, max, and reas, min, forecasts are for 5% and 95% exceedance levels and also (2) below.

2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES	THIS YEAR AS % OF	
		AVE.D	LAST YR, AVERAGE
Dungeness River	0	0	0
Morse Creek	0	0	0
Elwha River	0	0	0

DATA CURRENT AS OF: 1/9/87 11:58:49

BASIN SUMMARY OF
SNOW COURSE DATA

JANUARY 1988

SNOW COURSE	ELEVATION	DATE	JANUARY 1987			
			SHOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
PEND DREILLE FIVER						
BENTON MEADOW	2370	12/30/86	6	1.2	2.2	3.0
BENTON SPRING	4920	12/30/86	26	6.4	5.1	8.6
HEART LAKE TRAIL	4800	12/28/86	27	5.7	6.9	9.2
HODODOO EASTIN	6050	12/28/86	56	17.8	16.7	21.5
HODODOO CREEK	5900	12/28/86	48	14.6	12.6	19.1
LOOKOUT	5140	1/05/87	50	13.6	10.5	14.5
NELSON CAN.	3100	1/07/87	35	8.3	4.4	7.2
SCHMEITZER BOWL	4800	12/29/86	39	10.4	6.8	13.8
SCHMEITZER RIDGE	6200	12/29/86	52	17.9	15.7	21.3
COLVILLE RIVER						
KETTLE RIVER						
BIG WHITE MTN CAN.	5510	12/30/86	31	5.9	7.3	7.2
FARRON CAN.	4000	12/30/86	22	3.5	5.6	9.9
OMAK LAKE, TWIN LAKES						
SPOKANE RIVER						
ABOVE BURKE	4100	1/05/87	34	8.0	5.6	8.4
LOOKOUT	5140	1/05/87	50	13.6	10.5	14.5
LOST LAKE	6110	12/31/86	65	20.2	17.2	25.2
MOSQUITO RIDGE	5200	1/01/87	--	12.5E	--	17.1
SHERWHIN	3200	1/02/87	19	3.7	3.9	5.6
SUNSET	5540	1/01/87	--	12.1E	--	14.7
NEWMAN LAKE						
RAGGED RIDGE						
SNOW COURSE	3330	12/30/86	13	2.6	4.8	3.9
SPokane Valley						
SNOW COURSE	ELEVATION	DATE	SHOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE
						1961-85

OKANOGAN RIVER		CAH.	6370	12/30/86	54	17.0	11.6	14.8	
BRENDA MINE		CAH.	4800	12/29/86	23	5.2	4.2	6.5	
ERDOWHERE		CAH.	3200	1/01/87	22	5.7	.9	4.6	
ENDERBY		CAH.	6200	12/30/86	67	17.5	19.7	18.6	
GREYBACK RES		CAH.	5120	12/30/86	17	3.0	4.4	3.1	
HAMILTON HILL		CAH.	4890	12/29/86	24	4.2	4.7	8.4	
HARTS PASS		FILLGH	6500	1/01/87	---	19.15	15.4	27.2	
ISINTOK LAKE		CAH.	5500	12/26/86	10	2.4	3.4	3.5	
LOST HORSE MTN		CAH.	6300	12/31/86	17	3.8	3.5	4.7	
HCCULLOCH		CAH.	4200	12/31/86	14	2.3	2.8	3.2	
MISSION CREEK		CAH.	5800	12/30/86	29	6.5	9.7	8.9	
MT. KOEAN		CAH.	5900	12/28/86	13	2.8	3.9	6.3	
SALMON Mtns		FILLD	4500	1/01/87	---	2.35	3.1	7.0	
SILVER STAR Mtn		CAH.	6000	12/28/86	38	10.5	13.2	13.4	
SUMMERLAND RES		CAH.	4200	12/28/86	15	3.3	3.7	4.5	
VASEUX CREEK		CAH.	4600	12/29/86	8	1.4	2.5	2.7	
WHITE ROCKS MTN		CAH.	6000	12/30/86	33	9.3	6.9	11.6	
METHOW RIVER		HARTS PASS	FILLOW	6500	1/01/87	---	19.15	15.4	27.2
SALMON Mtns		FILLDOW	4500	1/01/87	---	2.35	3.1	7.0	
CHELAN LAKE EASTIN		---	---	---	---	---	---	---	
LYMAN LAKE		FILLOW	5900	1/01/87	---	27.15	20.0	28.3	
MIRROR LAKE		FILLOW	5600	1/01/87	---	17.45	11.5	14.1	
PARK CR RIDGE		FILLOW	4600	1/01/87	---	24.45	15.8	20.6	
RAINY PASS		FILLOW	4780	1/01/87	---	14.95	11.2	23.2	
ENTIAT RIVER		---	---	---	---	---	---	---	
WENATCHEE RIVER		---	---	---	---	---	---	---	
BERNE MILL CREEK		3170	12/30/86	46	10.4	7.9	11.7	11.7	
ELENNET PASS		FILLOW	4270	1/01/87	---	5.95	9.1	11.5	
LYMAN LAKE		FILLOW	5900	1/01/87	---	27.15	20.0	28.3	
MERRITT		2140	12/30/86	25	4.3	6.4	7.5	7.5	
STEVENS PASS		FILLOW	4720	1/01/87	---	20.05	15.5	18.9	
STEVENS PASS SAND SD		3700	12/30/86	59	13.8	11.0	19.3	19.3	
SHOW COURSE		ELEVATION	DATE	SHOW	WATER	LAST	AVERAGE	YEAR	
				DEPTH	CONTENT	YEAR	1961-85		

Page 1 of 1

The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

Canada: Ministry of the Environment, Water Investigations Branch, Victoria, British Columbia

States: Washington State Department of Ecology
Washington State Department of Natural Resources

Federal: Department of the Army
 Corps of Engineers
U.S. Department of Agriculture
 Forest Service
U.S. Department of Commerce
 NOAA, National Weather Service
U.S. Department of the Interior
 Bonneville Power Administration
 Bureau of Reclamation
 Geological Survey
 National Park Service
 Bureau of Indian Affairs

Local: City of Tacoma
City of Seattle
Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company
Snohomish County P.U.D.
~~Cowlitz~~ Confederated Tribes

Private: Okanogan Irrigation District
Wenatchee Heights Irrigation District
Newman Lake Homeowners Association

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ROOM 360, U.S. COURT HOUSE
SPOKANE, WASHINGTON 99201

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

THIRD-CLASS BULK RATE
POSTAGE AND FEES PAID
USDA-SCS
SPOKANE, WA
PERMIT NO G-267

THIRD CLASS MAIL



SOIL CONSERVATION SERVICE

★ GPO 1983 696-712